DC-8 - AFRC 10/27/18 - 10/28/18

Aircraft:
DC-8 - AFRC (See full schedule)
Flight Number:
1301
Payload Configuration:
OIB 2018 Configuration - ATM-Cambot, ATM-GPS/ATM-NAV, ATM-FLIR, ATM-T6, ATM-T7, Gravimeter, MCoRDS, UWB Snow RADAR, and piggybacks ARMAS & Tinman
Nav Data Collected:
Yes
Total Flight Time:
11.3 hours
Submitted by:
Timothy Moes on 10/28/18
Flight Segments:

From:	SCCI - Punta Arenas	**To:**	SCCI - Punta Arenas
Start:	10/27/18 22:09 Z	**Finish:**	10/28/18 09:24 Z
Flight Time:	11.3 hours		
Log Number:	198006	**PI:**	Joseph MacGregor
Funding Source:	Bruce Tagg - NASA - SMD - ESD Airborne Science Program		
Purpose of Flight:	Science		
Comments:	IceBridge successfully completed the first-ever under-flight of the recently launched IceSat-2 satellite. This was a nighttime fight needed to accomplish the high priority sea ice mission Mid-Weddell and obtain satellite validation for low-light conditions. IceSat-2 flew directly over the DC-8 at 4:35am UTC. The ICESat-2 ground track flown and its latency between the IS-2 crossovers is listed as follows: Line: 0451, t=0 hours. The DC-8 flew at 2000 ft on the southbound leg and at 3200 feet on the northbound leg in order to increase swath footprint to capture the IS-2 ground track since there is still some uncertainty to IS-2 pointing. In doing this snow radar had to change its bandwidth to adjust the Nyquist zones in flight to allow for proper data collection. To look at the same sea ice that ICESat-2 would view, on a number of occasions, the DC-8 descended to 500 ft above the sea ice to measure winds and then ATM-Nav adjusted their waypoints based on a sea ice drift code to create slight changes in the flight path. There were a few clouds at the beginning of the line, which caused us to miss roughly 20 minutes of data collection during the mission. The science instruments all worked well. The DC-8 returned with a writeup on the Standby ADI (Attitude Direction Indicator) which will be troubleshot by the DC-8 maintenance team.		

Flight Hour Summary:

	198006
Flight Hours Approved in SOFRS	345.8
Total Used	292.8
Total Remaining	53

198006 Flight Reports

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
10/02/18	1287	Check	2.6	2.6	343.2	0
10/08/18	1289	Transit	10.1	12.7	333.1	0
10/08/18	1290	Transit	2.8	15.5	330.3	0
10/10/18 - 10/11/18	1291	Science	11.5	27	318.8	0
10/11/18 - 10/12/18	1292	Science	11.6	38.6	307.2	0
10/12/18 - 10/13/18	1293	Science	11.3	49.9	295.9	0

10/13/18 - 10/14/18	1294	Science	10.7	60.6	285.2	0
10/15/18 - 10/16/18	1295	Science	11.1	71.7	274.1	0
10/16/18 - 10/17/18	1296	Science	10.1	81.8	264	0
10/18/18 - 10/19/18	1297	Science	11.1	92.9	252.9	0
10/19/18 - 10/20/18	1298	Science	10.8	103.7	242.1	0
10/20/18 - 10/21/18	1299	Science	10.7	114.4	231.4	0
10/22/18 - 10/23/18	1300	Science	11.1	125.5	220.3	0
10/27/18 - 10/28/18	1301	Science	11.3	136.8	209	0
10/30/18 - 10/31/18	1302	Science	11.7	148.5	197.3	0
10/31/18 - 11/01/18	1303	Science	11.3	159.8	186	0
11/01/18	1304	Transit	0.6	160.4	185.4	0
11/03/18 - 11/04/18	1305	Science	11	171.4	174.4	0
11/04/18	1306	Science	10.8	182.2	163.6	0
11/05/18	1307	Science	10.4	192.6	153.2	0
11/07/18	1308	Science	10.4	203	142.8	0
11/09/18 - 11/10/18	1309	Science	11.1	214.1	131.7	0
11/10/18 - 11/11/18	1310	Science	10.6	224.7	121.1	0
11/11/18	1311	Science	10.8	235.5	110.3	0
11/12/18	1312	Science	10.7	246.2	99.6	0
11/14/18 - 11/15/18	1313	Science	11.2	257.4	88.4	0
11/15/18	1314	Science	10.3	267.7	78.1	0
11/16/18 - 11/17/18	1315	Science	10.1	277.8	68	0
11/19/18	1316	Transit	3.4	281.2	64.6	0
11/21/18	1317	Transit	11.6	292.8	53	0

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

Related Science Report:

OIB - DC-8 - AFRC 10/27/18 - 10/28/18 Science Report

Mission:
OIB
Mission Summary:

Mission: Mid-Weddell
Priority: High

Overnight IceBridge successfully completed the high priority sea ice mission Mid-Weddell. This was a momentous and historical mission for us because it required many pieces to fall into place.

1. The local Chilean fuel trucker strike to end, so our plane could get fuel.
2. The fast acting DC8 crew had to bring down a new window from Palmdale and install it.
3. Ideal weather conditions and clear skies were needed in the Weddell Sea.
4. A suitable ICESat-2 crossover location and time in the middle of the night.
5. Ideal low-light conditions so that ICESat-2 range retrieval algorithm could be tested in ambient light.
6. To work with the DC8 crew and pilots to drop down to 500 feet in order to take wind measurements to apply our sea ice drift code and adjust our flight path accordingly. Allowing us to fly over the same sea ice that IS-2 would fly over.

All of these things fell into place tonight and we were able to complete this mission without any issues. We also experienced our **first OIB mission where IS-2 flew directly over us at 1:35am local time**. This wouldn?t have been possible without every person on OIB coming together and working together as a team. As we say: ?Team work makes the dream work!?

The ICESat-2 ground track that was flown and its latency between the IS-2 crossovers is listed below:
Line: 0451, t=0 hours

Although this was an overnight flight, forcing everyone on board to stay up throughout the night, spirits and excitement were high due to the IS-2 crossover inflight, as well as the beautiful and multiple sunsets/sunrises and the orange, pink, and blue glow over the sea ice.

OIB flew at 2000 ft on the outbound leg and at 3200 feet on the inbound leg in order to increase our swath footprint to capture the IS-2 ground track since there is still some uncertainty to IS-2 pointing. In doing this snow radar had to change its bandwidth to adjust the Nyquist zones in flight to allow for proper data collection. There were a few clouds at the beginning of the line, which caused us to miss roughly 20 minutes of data collection during the mission.

Outreach: NASA?s Katy Mersmann photographed and took audio during flight for social media outreach. OIB also hosted a professor and 2 students from the Universidad de Magallanes. These students won a competition dealing with the importance of research such as OIB and international collaboration.

Media: Tonight?s mission hosted a variety of media including ?La Ventana?, an US embassy funded Antarctic documentary group, as well as Angela Posada, a freelance writer and her photographer.

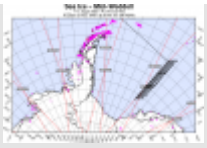
Outlook: OIB will take the remainder of Sunday off, after landing back in Punta Arenas at 6am, and will take a required hard down day on Monday. Science missions will resume on Tuesday.

List of attached figures:

1. Map of today?s science mission. (John Sonntag/NASA)
2. ATM T-6 maps for same waypoint accounting for sea ice drift outbound and inbound. Very quick glance over looking for similar features. Note different plane altitude for each leg. This obviously needs to be looked into more. (Matt Linkswiler/NASA)
3. Newly formed thin ice in a polynya with a ?milky ice river? in the center. Small clouds are seen in the distance along with the pink horizon. (Linette Boisvert/NASA)
4. One of the many sunrises seen during the mission out the window of the DC8 over the sea ice (Linette Boisvert/NASA)
5. Clouds forming over a polynya due to evaporation in the Weddell Sea. (Linette Boisvert/NASA)

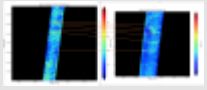
Images:

Figure 1



Read more

Figure 2



Read more

Figure 3

Read more

Figure 4

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Figure 5

Read more

Submitted by:
Linette Boisvert on 10/29/18

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